

Case report

Bilateral osteoma of the internal auditory canal: Case report and literature review



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ABSTRACT

Osteomas of the external auditory canal tend to be rather common; those of the internal auditory canal (IAC) are much rarer, though, with less than twenty cases reported in literature up to this very day. Bilateral IAC osteomas, as in this case, are extremely unusual.

These benign bone tumors grow very slowly and this implies that the patient is very often asymptomatic. The diagnosis is generally made relatively late and it is, in many cases, absolutely incidental, with Computed Tomography (CT) scans of the temporal bones performed for other reasons. The manuscript describe the case of a patient complaining with progressive bilateral hearing impairment, worsening in the course of many years; we would like to point out the benefits brought by CT in the diagnosis and therapeutic choice, which is, still today, not yet subject to unanimous consensus.

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Case description

The patient is a 48 old Caucasian male, admitted to our University Audiology clinic. The patient was healthy except for a progressive hearing impairment bilaterally. An audiometric test was then performed to better define the exact nature of the hearing, showing a bilateral perceptive hearing impairment (Fig. 1). The audiometric test confirmed the hearing loss to be of nervous nature, with a specific diagnostic suspect of internal auditory canal (IAC) lesion.

The Multi-Planar Reconstruction (MPR) CT study of the skull, showed bilateral, millimetric, hyperdense, asymmetric in volume, roundish, peduncolated and smooth IAC lesions, rising by the superior and posterior wall of the internal auditory canal (Fig. 2a and b). The CT density and morphology of the lesions were comparable to those usually found in osteomas.

On Sagittal MPR CT, we measured the right (Fig. 2(c)) and left (Fig. 2(d)) IAC stenosis, measuring respectively 0.6 and 0.77 cm, due to bilateral and asymmetric sub-centimetric tumors.

No potential or possible technical issues encountered in imaging. The local ethical committees approved the work, that conforms to standards currently applied in our country. The patient of the manuscript has signed an informed consent for both the audiometric test for both the CT study.

Discussion

IAC osteomas are benign, slowly growing, extremely rare peduncolated bone tumors with only few cases reported in the literature. Several causes have been suggested for the pathogenesis IAC osteoma, such as trauma, infection, inflammation, hormones disorders, and constant vascular irritation.¹

The most common locations of the temporal bone osteomas are the mastoid cortex and the external auditory canal,² but it may also develop in other locations.³ They are usually asymptomatic, but most common symptoms are: vertigo, tinnitus and hearing loss due to the compression on the acoustic-facial bundle. Osteomas are incidentally discovered on radiologic studies (incidentaloma).²

Osteomas developing in the internal auditory meatus might compromise the lumen of the canal, thus compressing the VII and VIII cranial nerves. In 2000, Vrabec et al. described the first case of bilateral osteomas of the IAC, and later in 2008, Gerganov et al., described the second case.⁴

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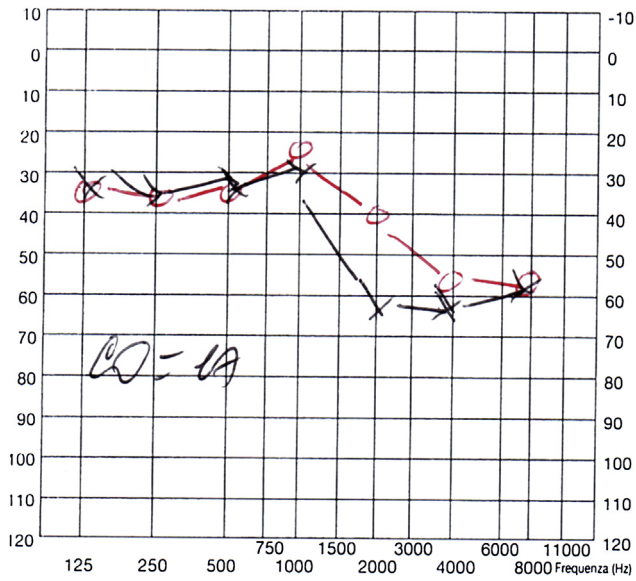


Figure 1. Bilateral perceptible hearing loss; the red line represent the right ear, while the black line the left ear.

Another case was reported by Brake et al., in 2014.⁵ The diagnosis is established on radiological characteristics: focal homogeneous, often solitary and pedunculated bone tumor, well limited, rounded or multilobed, extending in the IAC space, with the remainder canal of normal dimension.²

The normal range of internal auditory canal vertical diameters is 2–8 mm, with an average of 4 mm. A narrow internal auditory canal was considered to be a vertical diameter of the internal auditory canal <3 mm according to Jackler et al.⁶ On histologic examination, an osteoma displays fibrovascular channels within the bone. Audiometric examination is crucial for assessing hearing loss.

The main differential diagnoses are stenosis or exostosis of the IAC.⁶ The exostoses are generally multiple and bilateral, appearing, on CT, smoothly bordered, broad-based bony growth protruding into the IAC and without fibrovascular channels on histologic examination.

Most of the other lesions occur in the lateral IAC,² whereas osteomas have only been confirmed to arise in the medial IAC. Osteomas are focal rather than broad-based, with the remainder of the IAC maintaining normal dimensions. Magnetic resonance imaging (MRI) is the examination of choice in cases of doubt, but isn't the gold standard. Surgical treatment of the osteoma of IAC is carried out in presence of symptoms of medium severity, but each case is different from another.

In this case, the diagnosis of bilateral osteoma was made only on CT study, on the basis of specific morphological and densitometric features and the patient was subjected to periodic follow-up.

Compared to standard X-ray, the CT study allows both a better definition of little bone structures and MPR specific measurement. In conclusion, it can be stated that this case is particularly unusual, considering that in literature more than 100 cases of temporal bone osteomas have been documented; of which less than 24 cases arose from the IAC with only three cases reported in the literature of bilateral lesions.^{2–5} In fact, this patient is the fourth case of bilateral IAC osteomas.

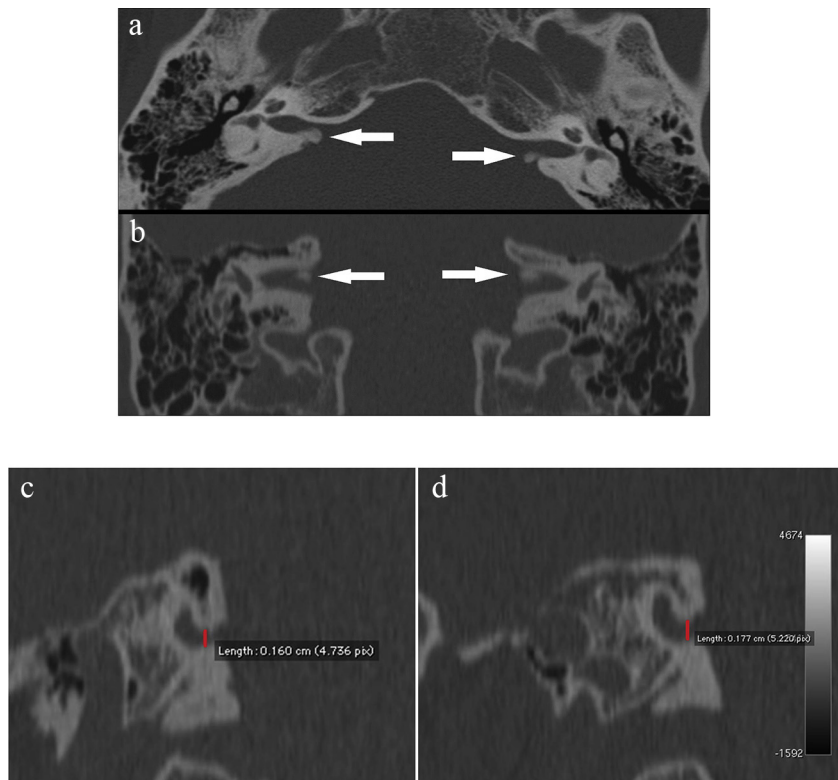


Figure 2. a) Axial and b) coronal CT MPR reconstruction. Bilateral asymmetric internal auditory canal osteomas, arising by the superior and posterior wall of the internal acoustic canal (white arrows). Note bilateral acoustic meatus narrowing in sagittal right (c) and left (d) reconstructions (red lines).

Conflict of interest

None.

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